Polarographic Studies on the Urinal Colloids. (II)

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Table 3. Succinate $10^{-2}M$: glucose $10^{-3}M$.

Further additions	CO_2 (μl.) evolved in	
	10	30 min.
$MnCl_2$ $10^{-2}M$	60	81
$MnCl_2$ $10^{-3}M$	51	71
$MnCl_2$ $10^{-4}M$	21	36
$MgCl_2$ $10^{-2}M$	41	59
$MgCl_2$ $10^{-3}M$	30	41

25. Polarographic Studies on the Urinal Colloids. (II)

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(K. Inouye Laboratroy)

In the preceding paper (T. Sasai, M. Egawa, Y. Kumahara and H. Hayami: *This Bulletin*, **29**, 15, 1952) it was reported that the urinal components showing the protein double wave were precipitated by alcohol-addition and were identical with the mucoprotein; furthermore it was indicated that this mucoprotein was related to the occurrence of the so-called lability test in serum or in urine such as Weltmann test or Donaggio test. The detail of the latter fact will be stated in the other paper. In this report the experimental results are shown which indicated the difference between two samples of mucoprotein, i. e. the one obtained from normal urine, the other from the patient with liver cancer.

1. Comparison of two curves which express the relationship between the concentration of mucoprotein and their wave-height: Both samples showed similar curves agreeing with the one of isothermal adsorption. Approximately up to the conc. of 0.01% they are almost linear and coincident each other. In the region over 0.01% they are separated, in the manner that the wave from healthy mucoprotein is higher than that of liver cancer, for example in 0.02% the former corresponds to 168mm., the latter to 132mm. Beyond the conc. of 0.07% they reached the constant value, that is to say the limiting value of the adsorption curve: 270mm. and 145mm., respectively.

2. When the hydrolysed samples were examined to measure the height as the cystin waves using Brdička's method (Brdička, R.: *Collection Czech.* **5**, 238, (1933)), difference was found between them: 0.04% of normal sample gave 58 mm., while the corresponding value of cancer-sample 54mm., if taken G. S. as 1/100. Similar differences were also resulted in other three samples obtained from the patients of gastric cancer, pulmonary tuberculosis and portal cirrhosis.

3. The solubility curves of both samples against alcohol were examined, showing that the cancer-sample dissolves slightly more than the normal. No remarkable difference, however, was found under their Donaggio activities.

4. Comparison of chemical findings: The amount of total nitrogen was almost the same: i. e. 8.5 and 9.0%. After the absence of free amino acids in both samples was ascertained, paper partition chromatography of each hydrolysate was investigated. The results are that they are composed of the same kinds of amino acids, namely leucine, valine, proline, tyrosine, alanine, threonine, glutamic acid, serine, arginine and other unknown components, while phenylalanine and taurine could not be demonstrated which distinguished them from that of plasma hydrolysates. To resume the above, two samples were identical in many respects, although it was sure that there exists also clear difference in quality. M. Crossley ("Proceedings of 1. International Polarograph. Congress in Prague", Part 1, P. 23) has recently reported that the polarographic activity, which means the ratio of the wave height from Brdička's filtrate (R. Brdička,: *Klin. Wschr.*, 17, 1141, (1939)) to its nitrogen content, is different in response to the individual material. In this respect we are now examining clinically the limiting values above mentioned.

Errata

(Vol. 29, P. 62)

Line 12 (right side): *For* $\overset{\frown}{\text{pe}}$ e e p e e *read* $\overset{\frown}{\text{pe}}$ e p p e e.

Line 32: *For* Dikinson *read* Dickinson.